

NMCP COVID-19 Literature Report #44: Friday, 16 October 2020

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Purpose: These now weekly reports, published on Fridays, are curated collections of current research, evidence reviews, and news regarding the COVID-19 pandemic. Please feel free to reach out with questions, suggestions for future topics, or any other concerns.

All reports are available online at <https://nmcp.libguides.com/covidreport>. Access is private; you will need to use the direct link or bookmark the URL, along with the case-sensitive password "NMCPfinest".

Disclaimer: I am not a medical professional. This document is current as of the date noted above. While I make every effort to find and summarize available data, things are changing rapidly, with new research and potentially conflicting literature published daily.

Statistics

Global today: 39,015,163 confirmed cases and 1,099,727 deaths in 189 countries/regions

7 days ago: 36,593,879 confirmed cases and 1,063,084 deaths in 188 countries/regions

14 days ago: 34,374,469 confirmed cases and 1,024,426 deaths in 188 countries/regions

*United States**

top 5 states by cases (Virginia is ranked 15th)

	TOTAL US	CA	TX	FL	NY	GA
Confirmed Cases	7,985,356	868,723	837,616	748,437	479,400	336,241
Tests	119,380,346	16,517,812	7,111,890	5,643,521	12,475,392	3,229,781
Deaths	217,904	16,847	17,288	15,830	33,337	7,492

*see census.gov for current US Population data; NA: not all data available

[JHU CSSE](https://covid19.jhu.edu/) as of 1100 EDT 16 October 2020

<i>Virginia</i>	Total	Chesapeake	Hampton	Newport News	Norfolk	Portsmouth	Suffolk	Virginia Beach
Cases	164,124	4,692	2,018	3,008	5,145	2,713	2,229	7,473
Hospitalized	11,780	457	78	111	393	295	130	415
Deaths	3,408	75	29	49	81	64	77	103

[VA DOH](https://vax.covid19.virginia.gov/) as of 1000 EDT 16 October 2020

Special Reports and Events

NIHR: [Living with Covid19 – a dynamic review](#)

"The novel coronavirus (Covid19) pandemic declared by the World Health Organisation [sic] in March 2020 has had far-reaching effects upon people's lives, health care systems and wider society. As yet there is little research into the number of people at risk of developing ongoing Covid19. Early attention has been on the acute illness generated by the virus, but it is becoming clear that, for some people, Covid19 infection is a long term illness.

This rapid and dynamic review draws on the lived experience of patients and expert consensus as well as published evidence to better understand the impact of ongoing effects of Covid19, how health and social care services should respond, and what future research questions might be. Our steering group concluded:

- There is a widespread perception that people either die, get admitted to hospital or recover after two weeks. It is increasingly clear that for some people there is a distinct pathway of ongoing effects. There is an urgent need to better understand the symptom journey and the clinical risks that underlie that. People, their families and healthcare professionals need realistic expectations about what to expect.
- A major obstacle is the lack of consensus on diagnostic criteria for ongoing Covid19. A working diagnosis that is recognised by healthcare services, employers and government agencies would facilitate access to much needed support and provide the basis for planning appropriate services. Whilst it is too early to give a precise definition, guidance on reaching a working diagnosis and a code for clinical datasets is needed.
- The fluctuating and multisystem symptoms need to be acknowledged. A common theme is that symptoms arise in one physiological system then abate only for symptoms to arise in a different system.
- There are significant psychological and social impacts that will have long-term consequences for individuals and for society if not well managed.
- The multisystem nature of ongoing Covid19 means that it needs to be considered holistically (both in service provision and in research). The varying degrees of dependency mean support in the community should be considered alongside hospital one-stop clinics. Social support needs to be understood together with the financial pressures on previously economically active people.
- Covid19 has a disproportionate effect on certain parts of the population, including care home residents. Black and Asian communities have seen high death rates and there are concerns about other minority groups and the socially disadvantaged. These people are already seldom heard in research as well as travellers, the homeless, those in prisons, people with mental health problems or learning difficulties; each having particular and distinct needs in relation to ongoing Covid19 that need to be understood."

NASEM: [Framework for Equitable Allocation of COVID-19 Vaccine](#)

"In response to the coronavirus disease 2019 (COVID-19) pandemic and the societal disruption it has brought, national governments and the international community have invested billions of dollars and immense amounts of human resources to develop a safe and effective vaccine in an unprecedented time frame. Vaccination against this novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), offers the possibility of significantly reducing severe morbidity and mortality and transmission when deployed alongside other public health strategies and improved therapies.

Health equity is intertwined with the impact of COVID-19 and there are certain populations that are at increased risk of severe illness or death from COVID-19. In the United States and worldwide, the pandemic is having a disproportionate impact on people who are already disadvantaged by virtue of their race and ethnicity, age, health status, residence, occupation, socioeconomic condition, or other contributing factors.

Framework for Equitable Allocation of COVID-19 Vaccine offers an overarching framework for vaccine allocation to assist policy makers in the domestic and global health communities. Built on widely accepted foundational principles and recognizing the distinctive characteristics of COVID-19, this report's recommendations address the commitments needed to implement equitable allocation policies for COVID-19 vaccine."

Selected Literature: Peer-Reviewed Journals

Date given is the date published or posted online; often these papers are ahead of print.

16 October 2020

JAMA Psychiatry: [Suicide Prevention in the COVID-19 Era: Transforming Threat Into Opportunity](#)

"Importance: Suicide, a leading cause of death with devastating emotional and societal costs, is a generally preventable cause of death and a critical global public health issue. The coronavirus disease 2019 (COVID-19) pandemic may increase the risk of population suicide through its effects on a number of well-established suicide risk factors.

Observations: Prior to the pandemic, many countries were engaging in suicide prevention strategies, and although the overall global burden of suicide deaths has increased, some national efforts were beginning to see positive results. Additionally, the gap between mental health needs and services has been increasing in many nations. With the added physical and mental health, social, and economic burdens imposed by the pandemic, many populations worldwide may experience increased suicide risk. Data and recent events during the first 6 months of the pandemic reveal specific effects on suicide risk. However,

increases in suicide rates are not a foregone conclusion even with the negative effects of the pandemic. In fact, emerging suicide data from several countries show no evidence of an increase in suicide during the pandemic thus far. There are actionable steps that policy makers, health care leaders, and organizational leaders can take to mitigate suicide risk during and after the pandemic.

Conclusions and Relevance: COVID-19 presents a new and urgent opportunity to focus political will, federal investments, and global community on the vital imperative of suicide prevention. Suicide prevention in the COVID-19 era requires addressing not only pandemic-specific suicide risk factors, but also prepandemic risk factors. This Special Communication provides prioritized, evidence-based strategies for clinicians and health care delivery systems, along with national and local policy and educational initiatives tailored to the COVID-19 environment. If implemented to scale, these interventions could significantly mitigate the pandemic's negative effects on suicide risk."

MMWR: [Demographic Characteristics, Experiences, and Beliefs Associated with Hand Hygiene Among Adults During the COVID-19 Pandemic — United States, June 24–30, 2020](#)

"Hand hygiene, including handwashing with soap and water and using hand sanitizer containing $\geq 60\%$ alcohol, is one measure recommended to prevent COVID-19 and other infectious diseases.

In an Internet-based survey, approximately 85% of 4,817 U.S. adults reported frequent hand hygiene after contact with public surfaces. Males, young adults, respondents with lower concern about risk for SARS-CoV-2 infection, and respondents without personal COVID-19 experience reported less frequent hand hygiene.

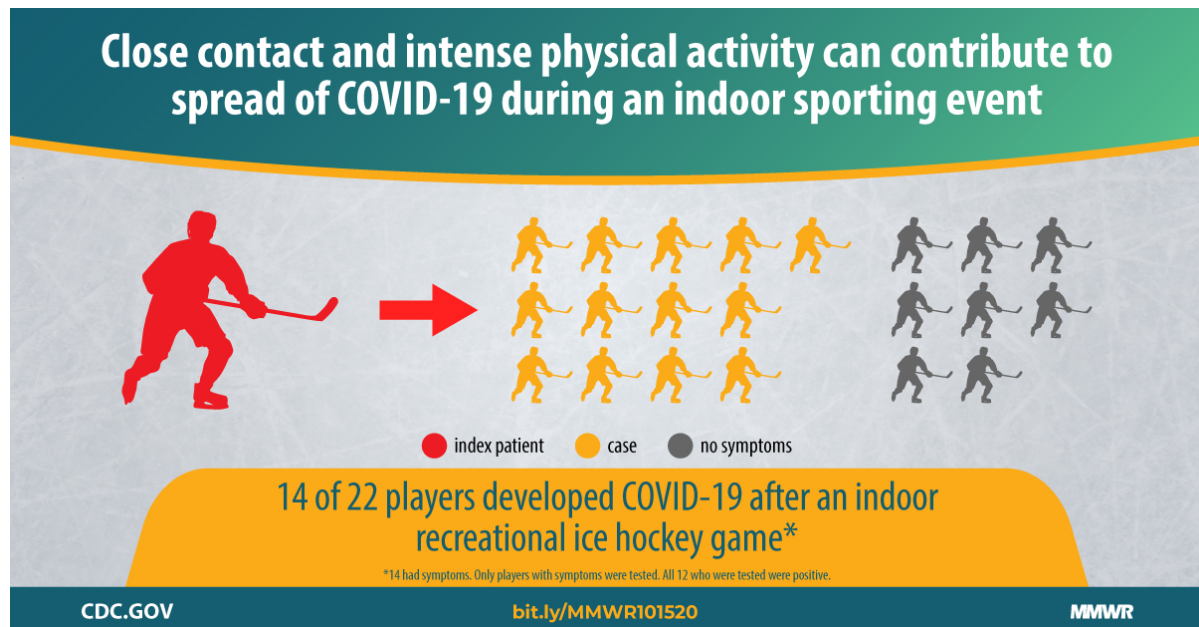
COVID-19 messages should continue promoting hand hygiene, particularly among men and young adults. Messages addressing COVID-19 risk perceptions and making handwashing accessible and hand sanitizer available by facilities in public settings should be considered to encourage and facilitate hand hygiene."

MMWR: [An Outbreak of COVID-19 Associated with a Recreational Hockey Game — Florida, June 2020](#)

"An investigation by the Florida Department of Health revealed that eight of 10 team A players (excluding the index patient), five of 11 players from team B, and one rink staff member experienced COVID-19 signs and symptoms during June 18–21, 2–5 days after the game. Excluding the index patient, 13 of the 21 (62%) players experienced illness....

In this game, hockey-specific face protection varied and included metal cages or plastic half-shields (covering the eyes and the upper part of the nose); some players do not wear face protection. Cloth face masks for disease control were not used in the locker rooms or during the game....

The high proportion of infections that occurred in this outbreak provides evidence for SARS-CoV-2 transmission during an indoor sporting activity where intense physical activity is occurring."



14 October 2020

Blood Adv: [Reduced prevalence of SARS-CoV-2 infection in ABO blood group O](#)

"Identification of risk factors for contracting and developing serious illness following infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is of paramount interest. Here, we performed a retrospective cohort analysis of all Danish individuals tested for SARS-CoV-2 between 27 February 2020 and 30 July 2020, with a known ABO and RhD blood group, to determine the influence of common blood groups on virus susceptibility. Distribution of blood groups was compared with data from nontested individuals. Participants (29% of whom were male) included 473 654 individuals tested for SARS-CoV-2 using real-time polymerase chain reaction (7422 positive and 466 232 negative) and 2 204 742 nontested individuals, accounting for ~38% of the total Danish population. Hospitalization and death from COVID-19, age, cardiovascular comorbidities, and job status were also collected for confirmed infected cases. ABO blood groups varied significantly between patients and the reference group, with only 38.41% (95% confidence interval [CI], 37.30-39.50) of the patients belonging to blood group O compared with 41.70% (95% CI, 41.60-41.80) in the controls, corresponding to a relative risk of 0.87 (95% CI, 0.83-0.91) for acquiring COVID-19. This study identifies ABO blood group as a risk factor for SARS-CoV-2 infection but not for hospitalization or death from COVID-19."

Blood Adv: [The association of ABO blood group with indices of disease severity and multiorgan dysfunction in COVID-19](#)

"Studies on severe acute respiratory syndrome coronavirus 1 (SARS-CoV-1) suggest a protective effect of anti-A antibodies against viral cell entry that may hold relevance for SARS-CoV-2 infection. Therefore, we aimed to determine whether ABO blood groups are associated with different severities of COVID-19. We conducted a multicenter retrospective analysis and nested prospective observational substudy of critically ill patients with COVID-19. We collected data pertaining to age, sex, comorbidities, dates of symptom onset, hospital admission, intensive care unit (ICU) admission, mechanical ventilation, continuous renal replacement therapy (CRRT), standard laboratory parameters, and serum inflammatory cytokines. National (N = 398 671; P = .38) and provincial (n = 62 246; P = .60) ABO blood group distributions did not differ from our cohort (n = 95). A higher proportion of COVID-19 patients with blood group A or AB required mechanical ventilation (P = .02) and CRRT (P = .004) and had a longer ICU stay (P = .03) compared with patients with blood group O or B. Blood group A or AB also had an increased probability of requiring mechanical ventilation and CRRT after adjusting for age, sex, and presence of ≥ 1 comorbidity. Inflammatory cytokines did not differ between patients with blood group A or AB (n = 11) vs O or B (n = 14; P > .10 for all cytokines). Collectively, our data indicate that critically ill COVID-19 patients with blood group A or AB are at increased risk for requiring mechanical ventilation, CRRT, and prolonged ICU admission compared with patients with blood group O or B. Further work is needed to understand the underlying mechanisms."

Clin Microbiol Rev: [Remdesivir against COVID-19 and Other Viral Diseases](#)

"Patients and physicians worldwide are facing tremendous health care hazards that are caused by the ongoing severe acute respiratory distress syndrome coronavirus 2 (SARS-CoV-2) pandemic. Remdesivir (GS-5734) is the first approved treatment for severe coronavirus disease 2019 (COVID-19). It is a novel nucleoside analog with a broad antiviral activity spectrum among RNA viruses, including ebolavirus (EBOV) and the respiratory pathogens Middle East respiratory syndrome coronavirus (MERS-CoV), SARS-CoV, and SARS-CoV-2. First described in 2016, the drug was derived from an antiviral library of small molecules intended to target emerging pathogenic RNA viruses. In vivo, remdesivir showed therapeutic and prophylactic effects in animal models of EBOV, MERS-CoV, SARS-CoV, and SARS-CoV-2 infection. However, the substance failed in a clinical trial on ebolavirus disease (EVD), where it was inferior to investigational monoclonal antibodies in an interim analysis. As there was no placebo control in this study, no conclusions on its efficacy in EVD can be made. In contrast, data from a placebo-controlled trial show beneficial effects for patients with COVID-19. Remdesivir reduces the time to recovery of hospitalized patients who require supplemental oxygen and may have a positive impact on mortality outcomes while having a favorable safety profile. Although this is an important milestone in the fight against COVID-19, approval of this drug will not be sufficient to solve the public health issues

caused by the ongoing pandemic. Further scientific efforts are needed to evaluate the full potential of nucleoside analogs as treatment or prophylaxis of viral respiratory infections and to develop effective antivirals that are orally bioavailable."

13 October 2020

BMJ Case Rep: [Sudden irreversible hearing loss post COVID-19](#)

"Sudden onset sensorineural hearing loss (SSNHL) is frequently seen by otolaryngologists. The exact pathophysiology of the disease is still unknown, with the most likely causative factor being following a viral infection. Immediate steroids are the best treatment to improve prognosis. Despite a plethora of papers in the literature describing SSNHL, there are only a few reported cases of hearing loss following COVID-19, none of which have been reported in the UK. This paper presents the first UK case of SSNHL following COVID-19. Physical examination and imaging excluded any other cause of hearing loss. A literature review showed that four other cases have been previously described. Hearing loss can be a significant cause of morbidity and can easily be missed in the intensive care setting. Being aware and screening for SSNHL following COVID-19 enables an early course of steroids, which offers the best chance of recovering hearing."

12 October 2020

Clin Infect Dis: [Sewage as a Possible Transmission Vehicle During a Coronavirus Disease 2019 Outbreak in a Densely populated Community: Guangzhou, China, April 2020](#)

"SARS-CoV-2 has been identified in the fecal matter of COVID-19 patients. However, sewage transmission has never been shown. In April 2020, a COVID-19 outbreak occurred in a densely populated community in Guangzhou, China. We investigated this outbreak to identify the mode of transmission.

A home quarantined order was issued in the community. We collected throat swab samples from the residents and environmental samples from the surfaces inside and around the houses, and conducted RT-PCR testing and genome sequencing. We defined a case as a resident in this community with a positive RT-PCR test, with or without symptoms. We conducted a retrospective cohort study of all residents living in the same buildings as the cases to identify exposure risk factors.

We found eight cases (four couples) in this community of 2888 residents (attack rate=2.8/1000), with onset during April 5–21, 2020. During their incubation periods, Cases 1-2 frequented market T with an ongoing outbreak. Cases 3-8 never visited market T during incubation period, lived in separate buildings from, and never interacted with, Cases 1-2. Retrospective cohort study showed that working as cleaners or waste picker (RR=13, 95%

Clexact: 2.3-180), not changing to clean shoes after returning home (RR=7.4, 95% Clexact: 1.8-34), collating and cleaning dirty shoes after returning home (RR=6.3, 95% Clexact: 1.4-30) were significant exposure risk factors. Of 63 samples collected from street-sewage puddles and sewage-pipe surfaces, 19% tested positive for SARS-CoV-2. Of 50 environmental samples taken from cases' apartments, 24% tested positive. Viral genome sequencing showed that the viruses identified from the squat toilet and shoe-bottom dirt inside the apartment of Cases 1-2 were homologous with those from Cases 3-8 and those identified from sewage samples. The sewage pipe leading from the apartment of Cases 1-2 to the drainage had a large hole above ground. Rainfalls after the onset of Cases 1-2 flooded the streets.

Our investigation has for the first time pointed to the possibility that SARS-CoV-2 might spread by sewage. This finding highlighted the importance of sewage management, especially in densely-populated places with poor hygiene and sanitation measures, such as urban slums and other low-income communities in developing countries."

JAMA: [COVID-19 and Excess All-Cause Mortality in the US and 18 Comparison Countries](#)

"Compared with other countries, the US experienced high COVID-19–associated mortality and excess all-cause mortality into September 2020. After the first peak in early spring, US death rates from COVID-19 and from all causes remained higher than even countries with high COVID-19 mortality. This may have been a result of several factors, including weak public health infrastructure and a decentralized, inconsistent US response to the pandemic."

JAMA: [Excess Deaths From COVID-19 and Other Causes, March-July 2020](#)

"Although total US death counts are remarkably consistent from year to year, US deaths increased by 20% during March-July 2020. COVID-19 was a documented cause of only 67% of these excess deaths. Some states had greater difficulty than others in containing community spread, causing protracted elevations in excess deaths that extended into the summer. US deaths attributed to some noninfectious causes increased during COVID-19 surges. Excess deaths attributed to causes other than COVID-19 could reflect deaths from unrecognized or undocumented infection with severe acute respiratory syndrome coronavirus 2 or deaths among uninfected patients resulting from disruptions produced by the pandemic."

JAMA Pediatr: [Outcomes of Neonates Born to Mothers With Severe Acute Respiratory Syndrome Coronavirus 2 Infection at a Large Medical Center in New York City](#)

"Question: What is the risk of mother-to-newborn transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)?

Findings: In this cohort analysis of the first 101 neonates born to mothers with perinatal SARS-CoV-2 infections at a single institution, 2 (2.0%) had positive test results for SARS-CoV-

2, but none had clinical evidence of coronavirus disease 2019 (COVID-19), despite most infants rooming-in with mothers and direct breastfeeding. Fifty-five infants were followed up in the first 2 weeks of life in a new COVID-19 Newborn Follow-up Clinic, all of whom remained healthy.

Meaning: These findings suggest that during the COVID-19 pandemic, separation of affected mothers and newborns may not be warranted, and direct breastfeeding appears to be safe."

Lancet Infect Dis: [Genomic evidence for reinfection with SARS-CoV-2: a case study](#)

"We present, to our knowledge, the first North American case of reinfection with SARS-CoV-2. A 25-year-old man, who was a resident of Washoe County in the US state of Nevada, had laboratory-confirmed SARS-CoV-2 infection in April, 2020, followed by secondary infection within a period of around 6 weeks, in June, 2020. The second infection was symptomatically more severe than the first. Genomic analysis showed the two viral agents were genetically distinct. The patient's immune reaction in vitro was not assessed and, thus, conclusions cannot be made about the duration or degree of immunity.

Reinfection with SARS-CoV-2 has been reported in at least four individuals worldwide. Thus, previous exposure to SARS-CoV-2 does not necessarily translate to guaranteed total immunity. The implications of reinfections could be relevant for vaccine development and application. From a public health perspective, all individuals—whether previously diagnosed or not—must take identical precautions to prevent infection with SARS-CoV-2. Further work is needed to assess immune reactions in vitro after reinfection."

See also: [Commentary – What reinfections mean for COVID-19](#)

Nature: [SARS-CoV-2 neutralizing antibody structures inform therapeutic strategies](#)

"The COVID-19 pandemic presents an urgent health crisis. Human neutralizing antibodies (hNAbs) that target the host ACE2 receptor-binding domain (RBD) of the SARS-CoV-2 spike^{1–5} show therapeutic promise and are being evaluated clinically^{6–8}. To determine structural correlates of SARS-CoV-2 neutralization, we solved 8 new structures of distinct COVID-19 hNAbs⁵ in complex with SARS-CoV-2 spike trimer or RBD. Structural comparisons allowed classification into categories: (1) VH3-53 hNAbs with short CDRH3s that block ACE2 and bind only to "up" RBDs, (2) ACE2-blocking hNAbs that bind both "up" and "down" RBDs and can contact adjacent RBDs, (3) hNAbs that bind outside the ACE2 site and recognize "up" and "down" RBDs, and (4) Previously-described antibodies that do not block ACE2 and bind only "up" RBDs⁹. Class 2 comprised four hNAbs whose epitopes bridged RBDs, including a VH3-53 hNAb that used a long CDRH3 with a hydrophobic tip to bridge between adjacent "down" RBDs, thereby locking the spike into a closed conformation. Epitope/paratope mapping revealed few interactions with host-derived N-glycans and minor contributions of antibody somatic hypermutations to epitope contacts. Affinity

measurements and mapping of naturally-occurring and in vitro-selected spike mutants in 3D provided insight into the potential for SARS-CoV-2 escape from antibodies elicited during infection or delivered therapeutically. These classifications and structural analyses provide rules for assigning current and future human RBD-targeting antibodies into classes, evaluating avidity effects, suggesting combinations for clinical use, and providing insight into immune responses against SARS-CoV-2."

Sci Rep: [The role of environmental factors on transmission rates of the COVID-19 outbreak: an initial assessment in two spatial scales](#)

"First identified in Wuhan, China, in December 2019, a novel coronavirus (SARS-CoV-2) has affected over 16,800,000 people worldwide as of July 29, 2020 and was declared a pandemic by the World Health Organization on March 11, 2020. Influenza studies have shown that influenza viruses survive longer on surfaces or in droplets in cold and dry air, thus increasing the likelihood of subsequent transmission. A similar hypothesis has been postulated for the transmission of COVID-19, the disease caused by SARS-CoV-2. It is important to propose methodologies to understand the effects of environmental factors on this ongoing outbreak to support decision-making pertaining to disease control. Here, we examine the spatial variability of the basic reproductive numbers of COVID-19 across provinces and cities in China and show that environmental variables alone cannot explain this variability. Our findings suggest that changes in weather (i.e., increase of temperature and humidity as spring and summer months arrive in the Northern Hemisphere) will not necessarily lead to declines in case counts without the implementation of drastic public health interventions." [Preprint posted 12 March 2020 on SSRN](#)

10 October 2020

Clin Infect Dis: [Convalescent plasma for patients with severe COVID-19: a matched cohort study](#)

"The efficacy of convalescent plasma (CP) for the treatment of COVID-19 remains unclear.

In a matched cohort analysis of hospitalized patients with severe COVID-19, the impact of CP treatment on in-hospital mortality was evaluated using univariate and multivariate Cox proportional-hazards models, and the impact of CP treatment on time to hospital discharge was assessed using a stratified log-rank analysis.

64 patients who received CP a median of 7 days after symptom onset were compared to a matched control group of 177 patients. The incidence of in-hospital mortality was 12.5% and 15.8% in the CP and control groups, respectively ($p = 0.52$). There was no significant difference in the risk of in-hospital mortality between the two groups (adjusted hazard ratio [aHR] 0.93, 95% confidence interval [CI] 0.39 – 2.20). The overall rate of hospital discharge was not significantly different between the two groups (rate ratio [RR] 1.28, 95% CI 0.91 – 1.81), although there was a significantly increased rate of hospital discharge among patients

65-years-old or greater who received CP (RR 1.86, 95% CI 1.03 – 3.36). There was a greater than expected frequency of transfusion reactions in the CP group (2.8% reaction rate observed per unit transfused).

We did not demonstrate a significant difference in risk of mortality or rate of hospital discharge between the CP and control groups. There was a signal for improved outcomes among the elderly, and further adequately powered randomized studies should target this subgroup when assessing the efficacy of CP treatment."

09 October 2020

Emerg Infect Dis: [SARS-CoV-2 Cluster in Nursery, Poland](#)

"We report a cluster of surprisingly high spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) associated with a single nursery in Poland. Our findings contrast with the presumed negligible role of children in driving the SARS-CoV-2 pandemic. Children 1–2 years of age might be effective SARS-CoV-2 spreaders."

MMWR: [Transmission Dynamics by Age Group in COVID-19 Hotspot Counties — United States, April–September 2020](#)

"CDC analyzed temporal trends in percent positivity by age group in COVID-19 hotspot counties before and after their identification as hotspots. Among 767 hotspot counties identified during June and July 2020, early increases in the percent positivity among persons aged ≤ 24 years were followed by several weeks of increasing percent positivity in persons aged ≥ 25 years. Addressing transmission among young adults is an urgent public health priority." ([summary source](#))

Science: [REGN-COV2 antibodies prevent and treat SARS-CoV-2 infection in rhesus macaques and hamsters](#)

"An urgent global quest for effective therapies to prevent and treat COVID-19 disease is ongoing. We previously described REGN-COV2, a cocktail of two potent neutralizing antibodies (REGN10987+REGN10933) targeting non-overlapping epitopes on the SARS-CoV-2 spike protein. In this report, we evaluate the in vivo efficacy of this antibody cocktail in both rhesus macaques, which may model mild disease, and golden hamsters, which may model more severe disease. We demonstrate that REGN-COV-2 can greatly reduce virus load in lower and upper airways and decrease virus induced pathological sequelae when administered prophylactically or therapeutically in rhesus macaques. Similarly, administration in hamsters limits weight loss and decreases lung titers and evidence of pneumonia in the lungs. Our results provide evidence of the therapeutic potential of this antibody cocktail."

08 October 2020

NEJM: [Remdesivir for the Treatment of Covid-19 — Final Report](#)

"Although several therapeutic agents have been evaluated for the treatment of coronavirus disease 2019 (Covid-19), no antiviral agents have yet been shown to be efficacious.

We conducted a double-blind, randomized, placebo-controlled trial of intravenous remdesivir in adults who were hospitalized with Covid-19 and had evidence of lower respiratory tract infection. Patients were randomly assigned to receive either remdesivir (200 mg loading dose on day 1, followed by 100 mg daily for up to 9 additional days) or placebo for up to 10 days. The primary outcome was the time to recovery, defined by either discharge from the hospital or hospitalization for infection-control purposes only.

A total of 1062 patients underwent randomization (with 541 assigned to remdesivir and 521 to placebo). Those who received remdesivir had a median recovery time of 10 days (95% confidence interval [CI], 9 to 11), as compared with 15 days (95% CI, 13 to 18) among those who received placebo (rate ratio for recovery, 1.29; 95% CI, 1.12 to 1.49; $P < 0.001$, by a log-rank test). In an analysis that used a proportional-odds model with an eight-category ordinal scale, the patients who received remdesivir were found to be more likely than those who received placebo to have clinical improvement at day 15 (odds ratio, 1.5; 95% CI, 1.2 to 1.9, after adjustment for actual disease severity). The Kaplan–Meier estimates of mortality were 6.7% with remdesivir and 11.9% with placebo by day 15 and 11.4% with remdesivir and 15.2% with placebo by day 29 (hazard ratio, 0.73; 95% CI, 0.52 to 1.03). Serious adverse events were reported in 131 of the 532 patients who received remdesivir (24.6%) and in 163 of the 516 patients who received placebo (31.6%).

Our data show that remdesivir was superior to placebo in shortening the time to recovery in adults who were hospitalized with Covid-19 and had evidence of lower respiratory tract infection."

NEJM: [Effect of Hydroxychloroquine in Hospitalized Patients with Covid-19](#)

"Hydroxychloroquine and chloroquine have been proposed as treatments for coronavirus disease 2019 (Covid-19) on the basis of in vitro activity and data from uncontrolled studies and small, randomized trials.

In this randomized, controlled, open-label platform trial comparing a range of possible treatments with usual care in patients hospitalized with Covid-19, we randomly assigned 1561 patients to receive hydroxychloroquine and 3155 to receive usual care. The primary outcome was 28-day mortality.

The enrollment of patients in the hydroxychloroquine group was closed on June 5, 2020, after an interim analysis determined that there was a lack of efficacy. Death within 28 days occurred in 421 patients (27.0%) in the hydroxychloroquine group and in 790 (25.0%) in the

usual-care group (rate ratio, 1.09; 95% confidence interval [CI], 0.97 to 1.23; $P=0.15$). Consistent results were seen in all prespecified subgroups of patients. The results suggest that patients in the hydroxychloroquine group were less likely to be discharged from the hospital alive within 28 days than those in the usual-care group (59.6% vs. 62.9%; rate ratio, 0.90; 95% CI, 0.83 to 0.98). Among the patients who were not undergoing mechanical ventilation at baseline, those in the hydroxychloroquine group had a higher frequency of invasive mechanical ventilation or death (30.7% vs. 26.9%; risk ratio, 1.14; 95% CI, 1.03 to 1.27). There was a small numerical excess of cardiac deaths (0.4 percentage points) but no difference in the incidence of new major cardiac arrhythmia among the patients who received hydroxychloroquine.

Among patients hospitalized with Covid-19, those who received hydroxychloroquine did not have a lower incidence of death at 28 days than those who received usual care."

Sci Immunol: [Persistence of serum and saliva antibody responses to SARS-CoV-2 spike antigens in COVID-19 patients](#)

"While the antibody response to SARS-CoV-2 has been extensively studied in blood, relatively little is known about the antibody response in saliva and its relationship to systemic antibody levels. Here, we profiled by enzyme-linked immunosorbent assays (ELISAs) IgG, IgA and IgM responses to the SARS-CoV-2 spike protein (full length trimer) and its receptor-binding domain (RBD) in serum and saliva of acute and convalescent patients with laboratory-diagnosed COVID-19 ranging from 3–115 days post-symptom onset (PSO), compared to negative controls. Anti-SARS-CoV-2 antibody responses were readily detected in serum and saliva, with peak IgG levels attained by 16–30 days PSO. Longitudinal analysis revealed that anti-SARS-CoV-2 IgA and IgM antibodies rapidly decayed, while IgG antibodies remained relatively stable up to 105 days PSO in both biofluids. Lastly, IgG, IgM and to a lesser extent IgA responses to spike and RBD in the serum positively correlated with matched saliva samples. This study confirms that serum and saliva IgG antibodies to SARS-CoV-2 are maintained in the majority of COVID-19 patients for at least 3 months PSO. IgG responses in saliva may serve as a surrogate measure of systemic immunity to SARS-CoV-2 based on their correlation with serum IgG responses."

Sci Immunol: [Persistence and decay of human antibody responses to the receptor binding domain of SARS-CoV-2 spike protein in COVID-19 patients](#)

"We measured plasma and/or serum antibody responses to the receptor-binding domain (RBD) of the spike (S) protein of SARS-CoV-2 in 343 North American patients infected with SARS-CoV-2 (of which 93% required hospitalization) up to 122 days after symptom onset and compared them to responses in 1548 individuals whose blood samples were obtained prior to the pandemic. After setting seropositivity thresholds for perfect specificity (100%), we estimated sensitivities of 95% for IgG, 90% for IgA, and 81% for IgM for detecting infected individuals between 15 and 28 days after symptom onset. While the median time

to seroconversion was nearly 12 days across all three isotypes tested, IgA and IgM antibodies against RBD were short-lived with median times to seroreversion of 71 and 49 days after symptom onset. In contrast, anti-RBD IgG responses decayed slowly through 90 days with only 3 seropositive individuals seroreverting within this time period. IgG antibodies to SARS-CoV-2 RBD were strongly correlated with anti-S neutralizing antibody titers, which demonstrated little to no decrease over 75 days since symptom onset. We observed no cross-reactivity of the SARS-CoV-2 RBD-targeted antibodies with other widely circulating coronaviruses (HKU1, 229 E, OC43, NL63). These data suggest that RBD-targeted antibodies are excellent markers of previous and recent infection, that differential isotype measurements can help distinguish between recent and older infections, and that IgG responses persist over the first few months after infection and are highly correlated with neutralizing antibodies."

07 October 2020

Infect Control Hosp Epidemiol: [Assessing SARS-CoV-2 Preparedness in US Community Hospitals: A Forgotten Entity](#)

"We performed a cross-sectional survey of infection preventionists in 60 US community hospitals between April 22 and May 8, 2020, and found several differences in hospital preparedness for SARS-CoV-2 with respect to personal protective equipment conservation strategies, protocols related to testing, universal masking and restarting elective procedures."

Virol J: [The effect of temperature on persistence of SARS-CoV-2 on common surfaces](#)

"The rate at which COVID-19 has spread throughout the globe has been alarming. While the role of fomite transmission is not yet fully understood, precise data on the environmental stability of SARS-CoV-2 is required to determine the risks of fomite transmission from contaminated surfaces.

This study measured the survival rates of infectious SARS-CoV-2, suspended in a standard ASTM E2197 matrix, on several common surface types. All experiments were carried out in the dark, to negate any effects of UV light. Inoculated surfaces were incubated at 20 °C, 30 °C and 40 °C and sampled at various time points.

Survival rates of SARS-CoV-2 were determined at different temperatures and D-values, Z-values and half-life were calculated. We obtained half lives of between 1.7 and 2.7 days at 20 °C, reducing to a few hours when temperature was elevated to 40 °C. With initial viral loads broadly equivalent to the highest titres excreted by infectious patients, viable virus was isolated for up to 28 days at 20 °C from common surfaces such as glass, stainless steel and both paper and polymer banknotes. Conversely, infectious virus survived less than 24 h at 40 °C on some surfaces.

These findings demonstrate SARS-CoV-2 can remain infectious for significantly longer time periods than generally considered possible. These results could be used to inform improved risk mitigation procedures to prevent the fomite spread of COVID-19."

06 October 2020

Reprod Sci: [Mechanisms by Which SARS-CoV-2 May Impact Male Fertility](#)

"The COVID-19 pandemic is unlike anything we have experienced in over a century. In the USA, waves of COVID-19 have migrated from the Northeast to the Sun Belt to the Midwest over the past year. Compared with females, males are more susceptible to SARS-CoV-2 infection, have more severe COVID-19 disease, and have higher death rates. In many countries, men are consistently more likely to die by a factor of almost 2. This article describes some of the mechanisms by which COVID-19 may be associated with male infertility, as discussed by Dutta and Sengupta."

05 October 2020

J Intern Med: [The Impact of Novel Coronavirus COVID-19 on Non-Communicable Disease Patients and Health Systems: A Review](#)

"Coronavirus Disease 2019 (COVID-19) is an ongoing global pandemic affecting all levels of health systems. This includes the care of patients with noncommunicable diseases (NCDs) who bear a disproportionate burden of both COVID-19 itself and the public health measures enacted to combat it.

In this review, we summarize major COVID-19 related considerations for NCD patients and their care providers, focusing on cardiovascular, pulmonary, renal, hematologic, oncologic, traumatic, obstetric/gynecologic, operative, psychiatric, rheumatologic/immunologic, neurologic, gastrointestinal, ophthalmologic, and endocrine disorders. Additionally, we offer a general framework for categorizing the pandemic's disruptions by disease-specific factors, direct health system factors, and indirect health system factors. We also provide references to major NCD medical specialty professional society statements and guidelines on COVID-19.

COVID-19 and its control policies have already resulted in major disruptions to the screening, treatment, and surveillance of NCD patients. In addition, it differentially impacts those with pre-existing NCDs and may lead to de novo NCD sequelae. Likely, there will be long-term effects from this pandemic that will continue to affect practitioners and patients in this field for years to come."

Nat Med: [Crowding and the shape of COVID-19 epidemics](#)

"The coronavirus disease 2019 (COVID-19) pandemic is straining public health systems worldwide, and major non-pharmaceutical interventions have been implemented to slow its spread. During the initial phase of the outbreak, dissemination of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was primarily determined by human mobility from Wuhan, China. Yet empirical evidence on the effect of key geographic factors on local epidemic transmission is lacking. In this study, we analyzed highly resolved spatial variables in cities, together with case count data, to investigate the role of climate, urbanization and variation in interventions. We show that the degree to which cases of COVID-19 are compressed into a short period of time (peakedness of the epidemic) is strongly shaped by population aggregation and heterogeneity, such that epidemics in crowded cities are more spread over time, and crowded cities have larger total attack rates than less populated cities. Observed differences in the peakedness of epidemics are consistent with a meta-population model of COVID-19 that explicitly accounts for spatial hierarchies. We paired our estimates with globally comprehensive data on human mobility and predict that crowded cities worldwide could experience more prolonged epidemics."

03 October 2020

Int J Lab Hematol: [A meta-analysis of SARS-CoV-2 patients identifies the combinatorial significance of D-dimer, C-reactive protein, lymphocyte, and neutrophil values as a predictor of disease severity](#)

"Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), known to be the causative agent of COVID-19, has led to a worldwide pandemic. At presentation, individual clinical laboratory blood values, such as lymphocyte counts or C-reactive protein (CRP) levels, may be abnormal and associated with disease severity. However, combinatorial interpretation of these laboratory blood values, in the context of COVID-19, remains a challenge.

To assess the significance of multiple laboratory blood values in patients with SARS-CoV-2 and develop a COVID-19 predictive equation, we conducted a literature search using PubMed to seek articles that included defined laboratory data points along with clinical disease progression. We identified 9846 papers, selecting primary studies with at least 20 patients for univariate analysis to identify clinical variables predicting nonsevere and severe COVID-19 cases. Multiple regression analysis was performed on a training set of patient studies to generate severity predictor equations, and subsequently tested on a validation cohort of 151 patients who had a median duration of observation of 14 days.

Two COVID-19 predictive equations were generated: one using four variables (CRP, D-dimer levels, lymphocyte count, and neutrophil count), and another using three variables (CRP, lymphocyte count, and neutrophil count). In adult and pediatric populations, the predictive equations exhibited high specificity, sensitivity, positive predictive values, and negative predictive values.

Using the generated equations, the outcomes of COVID-19 patients can be predicted using commonly obtained clinical laboratory data. These predictive equations may inform future studies evaluating the long-term follow-up of COVID-19 patients."

Pediatr Blood Cancer: [Hematological manifestations of SARS-CoV-2 in children](#)

"Infection from severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), though mainly a respiratory disease, can impair many systems, including causing hematological complications. Lymphopenia and hypercoagulability have been reported in adults with coronavirus disease 2019 (COVID-19) and are considered markers of poor prognosis. This review summarizes the hematological findings in children with SARS-CoV-2 infection. The majority of infected children had a normal leukocyte count, while the most common white blood cell abnormality was leukopenia. Lymphopenia, which may be a marker of severe disease, was rarer in children than in adults, possibly due to their immature immune system or due to the less severe manifestation of COVID-19 in this age group. Age may have an impact, and in neonates and infants the most common abnormality was lymphocytosis. Abnormalities of red blood cells and platelets were uncommon. Anemia and hypercoagulability were reported mainly in children presenting the novel multisystem inflammatory syndrome (MIS) associated with SARS-CoV-2."

ICYMI

Eur J Neurol: [Bilateral Facial Nerve Palsy associated with COVID-19 and Epstein-Barr Virus co-infection](#) (published online 30 September 2020)

"A 20-year-old male, with no relevant previous medical history, was admitted due to bilateral facial weakness. Two weeks before, he noticed odynophagia and fever of 39°C without cough. He associated significant asthenia with headache, myalgia, nausea, and vomiting and he was treated with levofloxacin 500mg qd for 7 days. One week after, during an initial improvement of the respiratory symptoms, he presented acute right facial weakness. He was diagnosed with right peripheral facial palsy and was treated with prednisone 60 mg/24h with a tapering schedule."

Emerg Infect Dis: [Waning Antibody Responses in Asymptomatic and Symptomatic SARS-CoV-2 Infection](#) (published online 29 September 2020)

"We investigated the kinetics of severe acute respiratory syndrome coronavirus 2 neutralizing antibodies in 7 asymptomatic persons and 11 patients with pneumonia. The geometric mean titer of neutralizing antibodies declined from 219.4 at 2 months to 143.7 at 5 months after infection, indicating a waning antibody response."

Emerg Infect Dis: [Flight-Associated Transmission of Severe Acute Respiratory Syndrome Coronavirus 2 Corroborated by Whole-Genome Sequencing](#) (published online 29 September 2020)

"To investigate potential transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during a domestic flight within Australia, we performed epidemiologic analyses with whole-genome sequencing. Eleven passengers with PCR-confirmed SARS-CoV-2 infection and symptom onset within 48 hours of the flight were considered infectious during travel; 9 had recently disembarked from a cruise ship with a retrospectively identified SARS-CoV-2 outbreak. The virus strain of those on the cruise and the flight was linked (A2-RP) and had not been previously identified in Australia. For 11 passengers, none of whom had traveled on the cruise ship, PCR-confirmed SARS-CoV-2 illness developed between 48 hours and 14 days after the flight. Eight cases were considered flight associated with the distinct SARS-CoV-2 A2-RP strain; the remaining 3 cases (1 with A2-RP) were possibly flight associated. All 11 passengers had been in the same cabin with symptomatic persons who had primary, culture-positive, A2-RP cases. This investigation provides evidence of flight-associated SARS-CoV-2 transmission."

Drug Saf: [Sex Differences in Reported Adverse Drug Reactions to COVID-19 Drugs in a Global Database of Individual Case Safety Reports](#) (published online 25 September 2020)

"Key Points: Sex differences in the reporting of adverse drug reactions (ADRs) for COVID-19-related drugs were observed in a global ADR database. More reports were received for males, which is consistent with their greater risk for COVID-19. The top reported ADRs for the same drugs also differ by sex."

Selected Literature: Preprints

Preprints are found on preprint servers such as [arXiv](#), [bioRxiv](#), and [medRxiv](#); they are commonly used for biomedical research. Preprints may later be published in peer-reviewed journals. Per medRxiv: "Preprints are preliminary reports of work that have not been certified by peer review. They should not be relied on to guide clinical practice or health-related behavior and should not be reported in news media as established information."

medRxiv: [Repurposed antiviral drugs for COVID-19; interim WHO SOLIDARITY trial results](#) (posted 15 October 2020)

"BACKGROUND WHO expert groups recommended mortality trials in hospitalized COVID-19 of four re-purposed antiviral drugs.

METHODS Study drugs were Remdesivir, Hydroxychloroquine, Lopinavir (fixed-dose combination with Ritonavir) and Interferon- β 1a (mainly subcutaneous; initially with

Lopinavir, later not). COVID-19 inpatients were randomized equally between whichever study drugs were locally available and open control (up to 5 options: 4 active and local standard-of-care). The intent-to-treat primary analyses are of in-hospital mortality in the 4 pairwise comparisons of each study drug vs its controls (concurrently allocated the same management without that drug, despite availability). Kaplan-Meier 28-day risks are unstratified; log-rank death rate ratios (RRs) are stratified for age and ventilation at entry.

RESULTS In 405 hospitals in 30 countries 11,266 adults were randomized, with 2750 allocated Remdesivir, 954 Hydroxychloroquine, 1411 Lopinavir, 651 Interferon plus Lopinavir, 1412 only Interferon, and 4088 no study drug. Compliance was 94-96% midway through treatment, with 2-6% crossover. 1253 deaths were reported (at median day 8, IQR 4-14). Kaplan-Meier 28-day mortality was 12% (39% if already ventilated at randomization, 10% otherwise). Death rate ratios (with 95% CIs and numbers dead/randomized, each drug vs its control) were: Remdesivir RR=0.95 (0.81-1.11, p=0.50; 301/2743 active vs 303/2708 control), Hydroxychloroquine RR=1.19 (0.89-1.59, p=0.23; 104/947 vs 84/906), Lopinavir RR=1.00 (0.79-1.25, p=0.97; 148/1399 vs 146/1372) and Interferon RR=1.16 (0.96-1.39, p=0.11; 243/2050 vs 216/2050). No study drug definitely reduced mortality (in unventilated patients or any other subgroup of entry characteristics), initiation of ventilation or hospitalisation duration.

CONCLUSIONS These Remdesivir, Hydroxychloroquine, Lopinavir and Interferon regimens appeared to have little or no effect on hospitalized COVID-19, as indicated by overall mortality, initiation of ventilation and duration of hospital stay. The mortality findings contain most of the randomized evidence on Remdesivir and Interferon, and are consistent with meta-analyses of mortality in all major trials."

medRxiv: [Persistent symptoms after Covid-19: qualitative study of 114 long Covid patients and draft quality criteria for service](#) (posted 14 October 2020)

"Approximately 10% of patients with Covid-19 experience symptoms beyond 3-4 weeks. Patients call this long Covid. We sought to document the lived experience of such patients, their accounts of accessing and receiving healthcare, and their ideas for improving services.

We held 55 individual interviews and 8 focus groups (n = 59) with people recruited from UK-based long Covid patient support groups, social media and snowballing. We restricted some focus groups to health professionals since they had already self-organised into online communities. Participants were invited to tell their personal stories and comment on other stories. Data were audiotaped, transcribed, anonymised and coded using NVIVO. Analysis incorporated sociological theories of illness, healing, peer support, the clinical relationship, access to care, and service redesign.

The sample was 70% female, aged 27-73 years, and comprised White British (74%), Asian (11%), White Other (7%), Black (4%), and Mixed (4%). 27 were doctors and 23 other health professionals. Approximately 10% had been hospitalised. Analysis revealed a confusing

illness with many, varied and often relapsing-remitting symptoms and uncertain prognosis; a heavy sense of loss and stigma; difficulty accessing and navigating services; difficulty being taken seriously and achieving a diagnosis; disjointed and siloed care (including inability to access specialist services); variation in standards (e.g. inconsistent criteria for seeing, investigating and referring patients); variable quality of the therapeutic relationship (some participants felt well supported while others described feeling fobbed off); and possible critical events (e.g. deterioration after being unable to access services). Emotional touch points in participant experiences informed ideas for improving services.

Quality principles for a long Covid service should include ensuring access to care, reducing burden of illness, taking clinical responsibility and providing continuity of care, multi-disciplinary rehabilitation, evidence-based investigation and management, and further development of the knowledge base and clinical services."

medRxiv: [Absence of SARS-CoV-2 neutralizing activity in pre-pandemic sera from individuals with recent seasonal coronavirus infection](#) (posted 11 October 2020)

"Cross-reactive immune responses elicited by seasonal coronaviruses might impact SARS-CoV-2 susceptibility and disease outcomes. We measured neutralizing activity against SARS-CoV-2 in pre-pandemic sera from patients with prior PCR-confirmed seasonal coronavirus infection. While neutralizing activity against seasonal coronaviruses was detected in nearly all sera, cross-reactive neutralizing activity against SARS-CoV-2 was undetectable."

medRxiv: [An in-depth investigation of the safety and immunogenicity of an inactivated SARS-CoV-2 vaccine](#) (06 October 2020)

"BACKGROUND In-depth investigations of the safety and immunogenicity of inactivated SARS-CoV-2 vaccines are needed.

METHOD In a phase I randomized, double-blinded, and placebo-controlled trial involving 192 healthy adults 18-59 years of age, two injections of three different doses (50 EU, 100 EU and 150 EU) of an inactivated SARS-CoV-2 vaccine or the placebo were administered intramuscularly with a 2- or 4-week interval between the injections. The safety and immunogenicity of the vaccine were evaluated within 28 days.

FINDING In this study, 191 subjects assigned to three doses groups or the placebo group completed the 28-day trial. There were 44 adverse reactions within the 28 days, most commonly mild pain and redness at the injection site or slight fatigue, and no abnormal variations were observed in 48 cytokines in the serum samples of immunized subjects. The serum samples diluted from 1:32 to 1:4096 and incubated with the virus did not show antibody-dependent enhancement effects (ADEs) with regard to human natural killer cells, macrophages or dendritic cells. At day 14, the seroconversion rates had reached 92%, 100% and 96% with geometric mean titers (GMTs) of 18.0, 54.5 and 37.1, and at day 28, the seroconversion rates had reached 80%, 96% and 92% with GMTs of 10.6, 15.4 and 19.6 in 0,

14 and 0, 28 procedures, respectively. Seroconversion was associated with the synchronous upregulation of ELISA antibodies against the S protein, N protein and virion and a cytotoxic T lymphocyte (CTL) response. Transcriptome analysis shaped the genetic diversity of immune response induced by the vaccine.

INTERPRETATION In a population aged 18-59 years, this inactivated SARS-CoV-2 vaccine was safe and immunogenic."

psyArXiv: [Supporting Families to Protect Child Health: Parenting Quality and Household Needs During the COVID-19 Pandemic](#) (posted 04 September 2020; updated 21 September)

"Background: Supportive parenting is critical for promoting healthy child development in the face of stressors, such as those occurring during COVID-19. Here, we address a knowledge gap regarding specific household risk factors associated with parenting quality during the pandemic and incorporate first-person accounts of family challenges and needs.

Methods: Mixed methods were applied to data collected between April 14th - 28th, 2020 from the "Parenting During the Pandemic" survey. Participants included 656 primary caregivers (e.g., mothers, fathers, foster parents) of least one child age 1.5-8 years of which 555 (84.6%) responded to at least one parenting questionnaire. Parenting quality was assessed across stressful, negative, and positive parenting dimensions. Household risk was examined across pandemic-linked (e.g., caregiver depression, unmet childcare needs) and stable factors (i.e., annual income, mental illness history). Significant correlates were examined with regressions in Mplus. Thematic analysis identified caregiver challenges and unmet needs from open-ended questions.

Findings: Caregiver depression, higher child parity, unmet childcare needs, and relationship distress predicted lower-quality parenting. Caregiver depression was the most significant predictor across every parenting dimension, with analyses indicating medium effect sizes, $d_s = .39 - .73$. Qualitative findings highlighted severe strains on parent capacities including managing psychological distress, limited social supports, and too much unstructured time.

Interpretations: Lower quality parenting during COVID-19 is associated with multiple household and pandemic risk factors, with caregiver depression consistently linked to parent-child relationship disruptions. Focused efforts are needed to address caregiver mental health to protect child health as part of the pandemic response."

News in Brief

Coronavirus cases have been rising around the country, with 40 states seeing week-to-week increases and more than 20 states setting records for new infections ([WaPo](#)).

Transmission and Exposure

The CDC's Director has warned about the risk of small gatherings in spreading COVID-19 ([CNN](#)).

Dr. Fauci suggests that we may need to 'bite the bullet' and rethink how we have Thanksgiving and other social gatherings ([CBS](#)).

A study by the DOD working with United Airlines suggests that it's 'almost impossible' to get COVID-19 on an airplane ([Military](#); [read study full text \[pdf\]](#)).

"Winter will make the pandemic worse. Here's what you need to know." ([MIT Tech Rev](#))

COVID-19 Reinfection

Two publications within the last week have brought reinfection to greater attention; see [Lancet Infect Dis](#) (noted above in the section on peer-reviewed articles) and this accepted manuscript from [Clin Infect Dis](#).

The case report in [Clin Infect Dis](#) is about an immunocompromised Dutch woman, she is the first documented death after reinfection with COVID-19 ([CNN](#)).

A third case of COVID-19 reinfection has been reported in Seattle ([Seattle Times](#)).

Reinfection with SARS-CoV-2 is real, but 'very, very rare' ([NYT](#)).

A reinfection tracker documents 23 cases as of 28 August 2020 ([BNO News](#)).

Treatments and Therapies

COVID-19 treatment guidelines have been updated to include mention of persistent symptoms or illness after recovery (aka 'long covid') from acute COVID-19 ([NIH](#)).

The ACTIV-5 Big Effect Trial will help identify promising COVID-19 treatments, be they approved therapies or investigational drugs, for larger studies ([NIH](#)).

Aviptadil, an investigational drug for respiratory failure related to critical COVID-19, shows increased survival in a small, prospective open-label study ([Relief](#)).

Vaccines

According to a new poll, 50% of those surveyed are willing to get an FDA-approved COVID-19 vaccine; this is down from 66% in July and 61% in August ([Gallup](#)).

Russian President Putin has announced approval of a second coronavirus vaccine ([NPR](#)).

Pfizer will expand its COVID-19 vaccine trial to include volunteers aged 12 years and older ([NPR](#)).

Pfizer also reports that it will have safety data for a possible EUA regulatory filing by late November ([Reuters](#)).

Vaxart announced that a phase 1 study of its oral tablet COVID-19 vaccine candidate has dosed the first patient ([ONT](#)).

"How anti-ageing drugs could boost COVID vaccines in older people" ([Nature](#)).

The Price of Research

Eli Lilly's phase 3 trial of the monoclonal antibody treatment has been paused over safety concerns ([CNBC](#)).

Johnson & Johnson has paused its COVID-19 vaccine study after an 'unexplained illness' in a volunteer ([STAT](#)).

As alarming as it may seem that these and other critical COVID-19 studies have been interrupted, keep in mind that these kinds of breaks and oversight safety boards are established safety mechanisms for clinical trials ([BuzzFeed](#)).

"The placebo response: a hidden risk to COVID-19 trials" ([STAT](#)).

Thanks, Coronavirus

"Teens did surprisingly well in quarantine: more sleep and family time—and less social media—may have made the difference" ([Atlantic](#); [see survey full text \[pdf\]](#)).

Remember early in the pandemic there were reports about SARS-CoV-2 in zoo animals? ([NatGeo](#)) Well, now we have published literature about it, including some support of human-to-animal transmission ([mBio](#)).

Squalene, a compound harvested from shark livers, is used in vaccines to boost the immune response; a coronavirus vaccine could increase the demand for the adjuvant and mean the deaths of hundreds of thousands of sharks ([NPR](#)).

Insomnia, alopecia, chronic headaches, and cracked teeth – just a few more things we can blame on the pandemic and its associated stress ([NPR](#)).

A Deeper Dive

Interactive: The Coronavirus Unveiled ([NYT](#); includes video, graphics, and figures about the structure of SARS-CoV-2)

Frontline has produced a documentary about America's medical supply crisis; the series also includes interactive features, in-depth interviews, and related content ([PBS](#); 54-min video).

Relatedly, some designers are trying to reimagine PPE ([Undark](#)).

Long read: "Inside the fall of the CDC: How the world's greatest public health organization was brought to its knees by a virus, the president and the capitulation of its own leaders, causing damage that could last much longer than the coronavirus." ([ProPublica](#))

Other Outbreaks and Health Threats

Contaminated water sources – for example, higher levels of benzene – are a health risk following wildfires ([STAT](#)).

Three people have died from a mysterious hemorrhagic fever in Sudan, raising fears of an Ebola outbreak ([East African](#)).

The FDA has approved inmazeb, an antibody cocktail, as the first therapy for Ebola ([STAT](#)).

And Now for Something Completely Different



DON'T TOUCH: If you are in Virginia, stay away from fuzzy caterpillars – they are venomous ([CBS](#)).

So you know how to social distance from this menace, <– [check out this image from Facebook](#).

Image not to scale – I have no idea how big or small it might be in real life. To be honest, that doesn't really look like a caterpillar to me. But I can see why someone might be tempted to touch it.

If photos of wild critters are your thing, here are the winners of the Wildlife Photographer of the Year for 2020 from the Natural History Museum, London ([Atlantic](#)).

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